



BFX89
BFY90

WIDE BAND VHF/UHF AMPLIFIER

- SILICON PLANAR EPITAXIAL TRANSISTORS
- TO-72 METAL CASE
- VERY LOW NOISE

APPLICATIONS :

- TELECOMMUNICATIONS
- WIDE BAND UHF AMPLIFIER
- RADIO COMMUNICATIONS

The BFX89 and BFY90 are silicon planar epitaxial NPN transistors produced using interdigitated base emitter geometry. They are particularly designed for use in wide band common-emitter linear amplifiers up to 1 GHz. They feature very high f_T , low reverse capacitance, excellent cross modulation properties and very low noise performance. The BFY90 is complementary to the BFR99A. Typical applications include telecommunication and radio communication equipment.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings	Value	Unit
V_{CEO}	Collector-Emitter Voltage ($I_B = 0$)	15	V
V_{CER}	Collector-Emitter Voltage ($R_{BE} \leq 50\Omega$)	30	V
V_{CBO}	Collector-Base Voltage ($I_E = 0$)	30	V
V_{EBO}	Collector-Base Voltage ($I_C = 0$)	2.5	V
I_C	Collector Current	25	mA
I_{CM}	Collector Peak Current	50	mA
P_{tot}	Total Power Dissipation at $T_{amb} \leq 25^\circ C$	200	mW
T_{stg}, T_j	Storage and Junction Temperature	-65 to 200	$^\circ C$



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THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJ-C}	Thermal Resistance, Junction – Case	Max	580
R_{thJ-}	Thermal Resistance, Junction – ambient	Max	880

ELECTRICAL CHARACTERISTICS

Tamb = 25°C unless otherwise specified

Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
I_{cBO}	Collector Cutoff Current ($I_E=0$)	$V_{CB} = 15V$	-	-	10	nA	
V_{CEK}^*	Collector-emitter Knee Voltage	$I_C = 20mA$	-	-	0.75	V	
f_T	Transition Frequency	$V_{CE} = 5V$ $f = 500MHZ$ $I_C = 2 mA$	BFX89	-	1	-	GHz
			BFY90	1	1.1	-	
		$V_{CE} = 5V$ $f = 500MHZ$ $I_C = 25 mA$	BFX89	-	1.2	-	
			BFY90	1.3	1.4	-	
h_{FE}	DC Current Gain	$I_C = 2mA$ $V_{CE} = 1 V$	BFX89	20	-	150	-
			BFY90	25	-	150	
		$I_C = 25mA$ $V_{CE} = 1 V$	BFX89	20	-	125	
			BFY90	25	-	125	
$C_{CBO}(1)$	Collector-base Capacitance	$I_E = 0$ $V_{CB} = 10V$ $f = 1MHZ$ $V_{CE} = 5$	BFX89	-	-	1.7	pF
			BFY90	-	-	1.5	
$C_{re}(2)$	Reverse Capacitance	$I_C = 2mA$ $f = 1MHZ$	BFX89	-	0.6	-	pF
			BFY90	-	0.6	0.8	

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Symbol	Ratings	Test Condition(s)	Min	Typ	Mx	Unit	
NF(2)	Noise Figure	$I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$ $f = 100\text{KHz}$ $R_g = \text{Optimized}$	BFY90 Only	-	-	4	dB
		$I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$ $f = 200\text{MHz}$ $R_g = \text{Optimized}$	BFX89	-	3.3	4	
			BFY90	-	2.5	3.5	
		$I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$ $f = 500\text{MHz}$ $R_g = 50\ \Omega$	BFX89	-	-	6.5	
			BFY90	-	-	5	
		$I_C = 2\text{mA}$, $V_{CE} = 5\text{V}$ $f = 800\text{MHz}$ $R_g = \text{Optimized}$	BFX89	-	7	-	
			BFY90	-	5.5	-	
		G _{pe} (2)	Power Gain (not neutralized)	For BFX89 $I_C = 8\text{mA}$ $V_{CE} = 10\text{V}$	$f = 200\text{MHz}$	19	
	$f = 800\text{MHz}$			-	7	-	
For BFY90 $I_C = 14\text{mA}$ $V_{CE} = 10\text{V}$	$f = 200\text{MHz}$			21	23	-	
	$f = 800\text{MHz}$			-	8	-	
P _o	Output Power	For BFX89 $I_C = 8\text{mA}$ $V_{CE} = 10\text{V}$ $D_{im} = -30\text{dB}$	(3) Channel 9	-	6	-	mW
			(4) Channel 62	-	6		
		For BFY90 $I_C = 14\text{mA}$ $V_{CE} = 10\text{V}$ $D_{im} = -30\text{dB}$	(3) Channel 9	10	12	-	
			(4) Channel 62	-	12	-	

* I_B = value for which I_C = 22 mA at V_{CE} = 1V

(1) Shield lead not grounded

(3) f_p = 202MHz, f_q = 205 MHz, f_(2q-p) = 208MHz

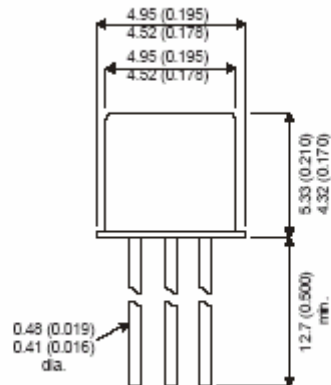
(2) Shield lead grounded

(4) f_p = 798MHz, f_q = 802 MHz, f_(2q-p) = 806MHz

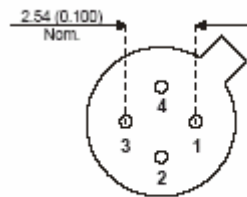
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MECHANICAL DATA CASE TO-72

Dimensions in mm (inches)



Pin 1 :	Emitter
Pin 2 :	Base
Pin 3 :	Collector
Pin 4 :	Case



TO72